A B C AIRWAYS

CATEGORY II MANUAL

FOREWORD

This Category II manual outline has been prepared as guidance material to assist in the preparation of the Category II manual required by FAR 91.34. This manual, when approved by the FAA, completes one condition for the conduct of Category II operations. Compliance with its contents as approved is also required in order to conduct such operations.

Sections I through III provide for a statement of the applicability of the manual, the procedures and instructions for use of the CAT II airborne equipment and a description of the airborne systems and equipment.*

Sections IV through VIII provide a partial example of a maintenance program designed to set forth the methods and procedures for maintaining and checking the Category II airborne equipment.

The guidance material contained herein does not preclude the development of Category II manuals by aircraft manufacturers, equipment manufacturers or those engaged in the installation and/or modifications of airborne equipment and systems intended for use in Category II operations.

*NOTE: Although not a manual requirement, operators may, if they desire, provide for copies of pilots' Category II letters of authorization as an item of content in the Category II manual.

Section I

APPLICABILITY

Section I - Applicability

The Category II manual is required for the operation and maintenance of the listed Category II airplane and its instruments and equipment identified below. It must be available in the airplane at all times for use by the crew and to all persons performing maintenance on the listed Category II equipment. An additional copy must be kept at the principal operations base and each copy must be kept current. Each page has been separately identified and approved by the Administrator.* No changes shall be made without the approval of the FAA Administrator except that additional copies of currently approved forms may be added.

The airplane to which this manual applies may be used to conduct Category II operations provided the instruments and items of equipment listed herein that are required for a particular Category II operation are:

1. Approved under Section 3 of Appendix A to FAR 91, and

2. Inspected and maintained in accordance with the approved maintenance program contained herein.

Aircraft N1234 Beech B-55 S/N 4255

* Date : _____
Inspector's Signature: _____
GADO (Identification): _____

Section II

OPERATING INSTRUCTIONS

Section II - Operating Instructions

1. GENERAL. Statement concerning basic flight control guidance system or systems to be employed during Category II operation, such as a flight director system only or approach coupler system only or both systems when installed and approved for use.

2. CATEGORY II AIRBORNE EQUIPMENT - DESCRIPTION. Describe in this section of the Category II manual the operational characteristics, capabilities and limitations appropriate to the airborne Category II installed equipment:

   a. The flight director system,

   b. The automatic approach coupler (if applicable),

   c. The approved system used to identify the decision height,

   d. The instrumentation and display systems,

   e. Automatic throttle control systems (if applicable),

   f. Other systems and/or devices peculiar to the particular installation; i.e., computed go-around guidance equipment.

3. OPERATIONAL PROCEDURES AND INSTRUCTIONS - GENERAL. Set forth procedures and instructions developed by the operator to be used and adhered to by the crews which should include the following:

   a. A procedure for determining the minimum runway length for use at destination airports (turbojet aircraft only).

   b. Approach monitoring. Crewmember duties during a Category II approach should be clearly delineated.

   c. Functional testing of the radar (radio) altimeter.

   d. Resolution of the decision height. If operation is predicated on the use of barometric altimeters, the errors determined to exist in the altimeter system, including correction for wheel height, are to be applied to the indicated altitude.

   e. Use of RVR information.

   f. Decision region. The region between the middle marker and the 100-foot point where the pilot must decide to either continue his approach or execute a go-around. Instructions to pilots should include the maximum raw ILS deviation which will permit a safe landing.

g. Missed approach procedure. Crewmember duties during a missed approach should be clearly delineated in the Category II manual.

h. Use of airborne low approach equipment including cross-over switching system, if provided for.

i. Instrument failure warning system

4. PROCEDURES FOR MANUAL APPROACH - FLIGHT DIRECTOR. Describe the procedures to be employed in the use of this equipment with respect to:

a. Mode selector (pilot and second in command).

b. Tuning of navigational receivers.

c. Course indicator check.

d. Course selection.

e. Pitch attitude setting.

f. Altitude hold.

g. Radio altimeter self-test (if appropriate).

h. Radio altimeter minimum altitude warning light and use of minimum decision altitude index (if appropriate).

5. PROCEDURES WHEN CLEARED FOR AN APPROACH WITH RESPECT TO:

a. Pilot-in-command's mode selector (heading to approach).

b. Second-in-command's mode selector (when appropriate).

c. Capture of localizer.

d. Capture of glide path.

e. Response of glide slope pointer approaching outer marker.

f. Glide slope capture indication and, if appropriate, appearance of runway symbol and status of pitch commands and V-bar commands.

g. Selection of missed approach heading and go-around pitch command.

h. Pilot-in-command and second-in-command flight director indicators, cross check for steering command and navigation displacement agreement.

i. Pilot-in-command and second-in-command duties and procedures as they relate to:

(1) Approach configuration of the airplane from outer marker to touchdown.

(2) Altitude and airspeed callout.

(3) Check for visual contact (specific phraseology).

(4) Indicating ground or lights.

j. Glide slope extension (if applicable).

k. Visual contact at 100 feet (second in command).

6. AUTOPILOT APPROACH. The same basic stabilized approach procedures should be established for the use of a coupled Category II approach as those employed for a manual approach. NOTE: If the performance of the auto-coupler dictates a lesser flap setting, the pilot should not be required to upset the stabilized approach by making a configuration change to landing flaps during the approach.

7. MISSED APPROACH. Procedures and instruction regarding the use of the airborne equipment during the execution of a missed approach.

8. EMERGENCY OPERATION - WARNING FLAGS. A brief description of the purpose and function of the following warning flags:

a. Glide slope flag.

b. VOR/LOC flag.

c. Compass flag.

d. Computer flag.

e. Radio altimeter flag.

Section III

FLIGHT CONTROL SYSTEM DESCRIPTION

Section III - Flight Control Guidance System Description

1. GENERAL DESCRIPTION. This section is intended to provide for the flight crew a description of the flight control guidance system and the purpose it serves, first, as a total system with respect to both crewmembers, and second, as a partial or separate system to be utilized by each pilot flight control system. This section of the manual should, for example, describe the pilot-in-command's flight control system and that of the second in command explaining:

   a. Similarity and/or differences of systems.

   b. Integration of autopilot and flight director systems (when appropriate).

   c. Mode selection for each or both systems.

   d. Data source for each system.

2. EQUIPMENT COMPONENT DESCRIPTION. Automatic flight control systems usually provide their services through the interconnection of various equipment. Such a system may contain several or all of the following units which should be briefly described as to basic function:

   a. Emergency disconnect.

   b. Rate gyro.

   c. Primary servo.

   d. Trim coupler.

   e. Sensing unit.

   f. Autopilot amplifier.

   g. Altitude controller.

   h. Airspeed sensor.

   i. Pedestal controller.

   j. Flight computer.

   k. Instrument amplifier.

3. WARNING SYSTEMS. The detection and warning system, its purpose and limitations associated with the flight control system, should be described and may include:

   a. Objective of the display and monitor warning system.

   b. Location.

   c. Comparison warning monitor (if provided).

   d. Basic data source displays.

   e. Data source comparison displays.

   f. Warning flags and data source comparison.

   g. Crew cross-check comparisons.

   h. Specific failures which may activate the warning flags for a particular system or equipment should be listed. As a typical example, in the case of some flight director systems, the steering computer flag monitors the following:

      (1) Flight director AC power.

      (2) Flight director DC power.

      In the case of a slightly different basic flight director system, the steering computer flag monitors:

      (1) Gyro mode, voltage and attitude power.

      (2) Heading mode, power and attitude.

      (3) NAV/LOC mode, attitude, heading power and VOR/LOC flag voltage.

      (4) Approach mode (low) attitude and heading power, LOC and GS flag voltage.

      It is highly desirable that this section of the manual contain functional block diagrams of the warning displays available to the crew and the warning data source. Data available from the equipment manufacturers appropriate for use in this or any other section of the Category II manual may be utilized.

4. LIST OF APPROVED CATEGORY II EQUIPMENT. This list of approved equipment is required as a part of the contents of the maintenance program portion of the Category II manual and, for the purpose of manual approval, need not be listed elsewhere unless the operator wishes to do so. However, if a list is provided in the operations portion, the required list contained in the maintenance program will be the controlling document in the event of any discrepancies between the two lists.

Section IV

MAINTENANCE PROGRAM - GENERAL

MAINTENANCE TERMINOLOGY

The term "inspection" as used in this program means inspection conducted by a qualified certificated mechanic or a repair station, using the manufacturer's recommended test equipment, or the equivalent, to check Category II instruments and items of equipment as installed in the airplane.

The term "functional flight check" means a check conducted by a pilot holding a current Category II pilot authorization for the type airplane being checked.

The term "bench check" means removal of an instrument or item of equipment from the airplane for:

a. A visual inspection for cleanliness, impending failure, need for lubrication, repair or replacement of parts,

b. Correction of deficiencies found, and

c. Calibration to at least the specifications and standards contained in the "Schedule of Inspections and Bench Checks" in this manual.

LIST OF INSTALLED CATEGORY II EQUIPMENT

Aircraft N1234 - B-55, Beech Baron, S/N 4255

EQUIPMENT ITEM	MAKE	MODEL	APPROVAL METHOD USED
Group I			
Localizer receivers	AJAX	16L	T.C.
Glide slope receiver	AJAX	22G	T.C.
Glide slope receiver	ARCO	GS33	T.C.
Marker receiver	VOLE	AV-21	Evaluation
Barometric altimeters	OLSMAN	399-B2	Evaluation
Flight director	GAINS	263-B	S.T.C.
Airspeed indicators	ZIPCO	16283	T.C.
(Add additional required Group I items.)			
Group II			
Failure warning systems	---	---	Evaluation
Rain removal equipment	---	---	Evaluation
(Add additional required Group II items.)			

NOTE: Where more than one instrument or item of equipment is required by FAR 91, Appendix A, Section 2, and different makes and models are installed in the pilot and second-in-command positions, each make and model should be listed.

RECORD OF PRIOR 12 MONTHS BENCH CHECKS, TESTS, AND INSPECTIONS

ITEM	MAKE	MODEL	CHECKED BY	STANDARDS	DATE
Localizer Receivers	AJAX	16L	Air Services Co. Cert. No. 6283 Columbus, Ohio	RTCA Paper 23-63/DO-117	10/6/66
Glide Slope Receiver	AJAX	22G	"	RTCA Paper 23-63/DO-117	10/6/66
Glide Slope Receiver	ARCO	GS-33	"	"	"
Baro. Altimeters	OLSMAN	399-B2	"	FAR 43, Appendix E	9/3/66
Comm. Transceiver	ARCO	KM12	"	Mfrs. Maint. Manual #863-25N1	10/6/66
Flight Director	GAINS	263-B	"	Mfrs. Maint. Manual #FD-263-B	11/10/66
Marker Receiver	VOLE	AV-21	"	Mfrs. Maint. Manual #334-21	10/6/66
Static Pressure System(s)	---	---	"	FAR 43 Appendix E	9/3/66

Copies of work orders and maintenance releases are available.

Section IV

MAINTENANCE PROGRAM - GENERAL

1. The specifications and procedures contained herein are intended to assure that the condition of the listed Category II equipment on which maintenance is performed is at least equal to its Category II approval condition before it is returned to service for Category II operations.

2. All defects and malfunctions of listed Category II equipment will be entered in the airplane maintenance records. Prior to conducting Category II operations, the pilot will determine, by review of these records, that all defects and malfunctions have been corrected and all required equipment has been returned to its Category II approval condition.

3. All tests, inspections, and bench checks will be performed at the intervals specified in the Category II maintenance schedule shown on page 31. Any change to that schedule must be approved by the FAA.

4. Bench checks of Category II instruments and items of equipment will be performed only by appropriately rated repair stations in accordance with the procedures and instructions contained in the bench check procedure section of this manual.

5. A work checksheet will be completed for all bench checks to assure that all required inspections, tests, and calibrations have been made. This worksheet will be filed in the permanent maintenance records of the airplane. Such a worksheet is shown on page 53 of this manual.

6. Inspections will be conducted using the procedures on the appropriate inspection sheet (see pages 37 - 42 of this manual) to test instruments and items of equipment while installed in the airplane. Where special test equipment is not specified for the performance of the inspection (communications equipment, etc.), manufacturers' instructions or accepted industry practices for operational testing will be used to determine that the equipment will perform as approved for Category II operation. Defective, out of tolerance, or malfunctioning equipment will be removed from the airplane for bench check, repair, and calibration and returned to Category II approval condition.

7. A functional flight check by a pilot holding a current Category II pilot authorization for this type airplane may be substituted for each alternate inspection.

8. The altimeter will be removed from the airplane and taken to a Class 1 instrument or a limited class instrument repair station appropriate to the altimeter make and model for bench check and calibration within 12 calendar months of the previous bench check.

9. An entry will be made on the Equipment Inspection and Bench Check Record, Form ABC-102, page 32 of this manual, for each inspection and bench check of an item of equipment. Functional flight checks performed by a pilot will be entered on this same form. All data spaces on the form will be completed. Individual Forms ABC-102 will be used for each listed item of equipment.

10. Entries will be made on Form ABC-101, page 33 of this manual, showing the date, airport, and reason for each discontinued Category II operation because of malfunction of a listed instrument or item of equipment. The entry will identify the instrument or item of equipment that malfunctioned and include a description of the malfunction.

11. All alterations to required instruments and items of equipment listed on page 24 must be approved by the FAA before the equipment is used in Category II operations.

12. When equipment listed on page 24 is replaced with the same make, model and design, the replacement equipment will be inspected and bench checked using the standards and procedures contained in this program to assure performance at least equal to Category II approval standards.

13. Changes to make, model or design of any components of the flight control guidance system must be approved as installed under applicable type or supplemental type certification procedures or by an FAA evaluation program.

Section V

MAINTENANCE - SCHEDULE AND RECORDS

SCHEDULE OF INSPECTION AND BENCH CHECKS

Aircraft N1234 - Category II Instruments and Items of Equipment

ITEM	MAKE	MODEL	INSPECTION	BENCH CHECK	CALIBRATION SPECS.
Group I					
Localizer Receivers	AJAX	16L	Qtrly	12 mo.	RTCA Paper 23-63/DO-117
Glide Slope Receiver	AJAX	22G	Qtrly	12 mo.	See page 55 of this manual
Glide Slope Receiver	ARCO	GS33	Qtrly	12 mo.	RTCA Paper 23-63/DO-117
Marker Receiver	VOLE	AV-21	Qtrly	12 mo.	Mfr. Manual 334-21
Barometric Altimeters	OLSMAN	399-B2	Qtrly	12 mo.	FAR 43, Appendix E
Flight Director	GAINS	263-B	Qtrly	12 mo.	Mfr. Manual FD-263-B
Airspeed Indicators	ZIPCO	16283	Qtrly	12 mo.	Mfr. Manual A-283
(Add additional required Group I items)					
Group II					
Static Systems	Test and inspect each 12 months to FAR 43, Appendix E standards.				

NOTE: Where more than one instrument or item of equipment is required by FAR 91, Appendix A, Section 2, and different makes or models are installed in the pilot and second-in-command positions, each make and model should be listed in the above schedule.

FORM ABC-104

CATEGORY II EQUIPMENT INSPECTION AND BENCH CHECK RECORD

A/C reg. no. N1234 MFR. & MODEL Beech B-55 S/N 5678Y
ITEM Marker Receiver MFR. & MODEL VOLE AV-21 S/N 2A-436
INSPECTION PERIOD 3 months BENCH CHECK PERIOD 12 months
INSPECTION & MAINTENANCE SPECIFICATIONS USED VOLE AV-21 Maint. Manual #334-21

INSPECTIONS

DATE PERFORMED	AGENCY OR PERSON PERFORMING	LOCATION	TECHNICIAN OR PILOT
6/6/66	Aero Services, Inc.	Cincinnati, O.	Technician
9/6/66	Q. O. Smith	Cleveland, O.	Pilot in Comm.

BENCH CHECKS

DATE PERFORMED	REPAIR STATION OR FACILITY PERFORMING	TECHNICIAN
12/4/66	Aero Service, Inc., Cincinnati, Ohio #237	Robt. Jones

FORM ABC-102

DISCONTINUED CATEGORY II APPROACHES AND EQUIPMENT MALFUNCTION RECORD

Position Legend:
Pilot - #1
Second in command - #2

DATE	AIRPORT	A/C REG. NO.	MALFUNCTION ITEM	DESCRIPTION OF MALFUNCTION
9/2/65	JFK	N1234	Glide Slope recvr. #1	Showed flag at OM.
9/10/65	JFK	N1234	Barometric altimeters	Readings did not agree.
1/10/66	ORD	N1234	Flight director	No LOC command.

Form ABC-101

Section VI

TECHNICIAN-CONDUCTED INSPECTIONS

GLIDE SLOPE RECEIVER SYSTEM INSPECTION
AJAX MODEL 22-G

The following inspection will be conducted on both glide slope receiving systems at the intervals specified in the "Schedule of Inspection and Bench Checks" contained in this manual. The inspection will be accomplished by a qualified certificated mechanic or a repair station, using ramp test equipment which will perform the tests listed in Paragraphs 1, 2 and 3. The flight director system must be turned on and set to GS MAN while performing these tests, because glide slope information is displayed on the flight director course indicator.

Following the test equipment manufacturer's instructions, perform the following sequence of tests:

1. Position the ramp test equipment at the proper distance from the airplane and radiate a standard glide slope test signal on the desired frequency of a sufficient strength to move the glide slope indicator flag alarm to the "out of sight" position.

2. Test for correct glide slope indicator deflection, full scale up and down and centering.

3. Test for correct flag alarm sensing and deflection and confirm that the alarm indicator is displayed during loss of either the 90 or 150 cps modulation, or reduction of both signals to one-half the normal 40 percent.

4. If possible, determine if any noise or interference is present which would cause erratic indications by running the engine(s) to check for ignition, electrical motor, or generator noise, and channel other receivers and transmitters to determinethat interaction is not taking place.

5. Make a thorough visual inspection of both receiving installations for physical security, electrical cable connections, condition of antenna, etc.

6. Enter the date, name of the agency or person conducting the inspection, indicate satisfactory or unsatisfactory performance in the maintenance record of the glide slope receivers.

The above inspection will also be made after the repair or replacement of any component of the glide slope receiving systems.

LOCALIZER RECEIVER SYSTEM INSPECTION
AJAX MODEL 16L

The following inspection will be conducted on both localizer receiving systems at the intervals specified in the "Schedule of Inspection and Bench Checks" contained in this manual. The inspection will be accomplished by a qualified certificated mechanic or a repair station, using ramp test equipment which will perform the tests listed in paragraphs 1, 2 and 3. The flight director system must be turned on and set to GS MAN while performing these tests, because localizer deflection is displayed on the flight director course indicator.

Following the test equipment manufacturer's instructions, perform the following sequence of tests:

1. Position the ramp test equipment in the proper location from the airplane and radiate a standard localizer test signal on the desired frequency of a sufficient strength to move the localizer flag alarm to the "out of sight" position.

2. Test for correct localizer indicator deflection, full scale to left and right and centering.

3. Test for correct flag alarm sensing and deflection and confirm that the alarm indicator is displayed during loss of either the 90 or 150 cps modulation, or reduction of both signals to one-half the normal 20 percent.

4. Channel the receiver to all navigational facilities which may be received at the test location, and confirm that the selector dial indicates the correct frequency.

5. Test the receiver audio outputs for satisfactory level, proper rotation and absence of noise in level control and selector switches when operated.

6. If possible, determine if any noise or interference is present by running the engine(s) to check for ignition, electrical motors, or generator noise, and channel other receivers and transmitters to determine that interaction is not taking place.

7. Make a thorough visual inspection of both receiving installations for physical security, electrical cable connections, condition of antenna, etc.

8. Enter the date, name of the agency or person conducting the inspection, indicate satisfactory or unsatisfactory performance in the maintenance record of the localizer receivers.

The above inspection will also be made after the repair or replacement of any component of the localizer receiving systems.

MARKER BEACON RECEIVER SYSTEM INSPECTION
VOLE MODEL AV-21

The following inspection will be conducted on the marker beacon receiving system at the intervals specified in the "Schedule or Inspection and Bench Checks" contained in this manual. The inspection will be performed by a qualified certificated mechanic or a repair station, using ramp test equipment which will perform the tests listed in paragraphs 1, 2 and 3.

Following the test equipment manufacturer's instructions:

1. Position the ramp test equipment directly beneath the marker beacon antenna and set the test generator for 20,000 microvolts output with 90 percent modulation at 3000 cps.

2. Turn on the airplane marker receiver and set the "High-Low" switch for "High" (maximum) sensitivity and determine that a 3000 cps tone is clearly audible in the airplane speaker and headset. The inner marker (white) indicator light should be brightly lighted at this time.

3. Repeat the above procedure using the 1300 and 400 cps tones, and make the same determinations. The amber indicator light (middle marker) should be brightly lighted when 1300 cps is applied, and the blue indicator light (outer marker) should be lighted when 400 cps is applied.

4. Repeat steps 2 and 3 with the "High-Low" switch in the "Low" position and determine at least that each audio tone is audible.

5. Make a thorough visual inspection of the receiving installations for physical security, electrical cable connections, condition of antenna, etc.

6. Enter the date, name of the agency or person conducting the inspection, indicate satisfactory or unsatisfactory performance, in the maintenance record of the marker receiver.

The above inspection will also be made after the repair or replacement of any component of the marker receiving systems.

FLIGHT DIRECTOR INSPECTION
GAINS MODEL 263-B

The following inspection will be performed on the flight director system at the intervals specified in the "Schedule of Inspection and Bench Checks" contained in this manual. The inspection will be performed by a qualified certificated mechanic or a repair station, using ramp test equipment to radiate the necessary test signals. Although not required in the Category II maintenance program, the VOR functions of the flight director system will also be tested, following the sequence of tests below.

Ramp test equipment capable of radiating standard VOR/ILS test signals, and marker beacon test signals will be used to perform the tests.

1. Preparation

   a. Determine that all power to the flight director system is OFF.

   b. Determine that the flight director control MODE SELECTOR switch is in the OFF position.

   c. Connect external power supply to aircraft and apply power.

2. Functional Test

   a. Turn on power to all units of the flight director system.

   b. Allow five minutes for equipment warmup, and then check erection of the vertical gyro. When the gyro is erected, the horizon bar will be centered, provided the airplane is level, and the GYRO flag will be retracted.

   c. Determine that the gyro-stabilized magnetic compass is slaved by observing the azimuth card on the Course Indicator for correct airplane magnetic heading. Determine that the COMPASS, COMPUTER and GYRO flag alarms, and V-bar command indicator are in the "out of sight" position.

   d. Turn on VOR/LOC and glide slope receivers and tune the VOR receiver to the VOR test signal frequency.

   e. Turn the flight director control MODE SELECTOR to SC (speed control) position and determine that the V-bar command indicator comes into view and that SC appears in the right annunciator window of the flight director indicator.

   f. Turn the MODE SELECTOR control to HDG position. The GYRO COMPUTER and COMPASS warning flags should remain "out of sight." The course indicator azimuth card should indicate the airplane magnetic heading. The annunciator windows should be blank.

g. If the heading marker has been left set in another position, turn the HDG knob on the course indicator until the heading marker is under the lubber line. The V-bar should center (wings level).

h. Rotate the PITCH COMMAND (on control unit) control knob clockwise, and determine that the V-bar command indicator in the flight indicator moves upward. The V-bar should move downward for a counter-clockwise rotation. Return PITCH COMMAND control knob to zero (V-bar aligned with airplane symbol).

i. Vary the heading marker 10 degrees both sides of the lubber line. The V-bar should call for a bank toward the new headings. Return the heading marker to the lubber line. The V-bar should center (wings level).

j. Turn the ALTITUDE HOLD toggle switch (on control unit) ON. Rotate the PITCH COMMAND control throughout its range and determine that the V-bar does not move, and that ALT appears in the left annunciator window of the director indicator. Turn ALTITUDE HOLD to OFF.

k. Rotate the COURSE knob on the course indicator until the course arrow is 15 degrees to either side of the course to the test signal, and set the MODE SELECTOR to VOR/LOC. Determine that HDG/VL appears in the right annunciator window of the director indicator, and the V-bar follows the heading marker for bank commands. The VOR/LOC flag alarm should be "out of sight."

l. Rotate the COURSE knob until the course arrow is on the inbound course to the test signal. The lateral deviation bar should center and the TO-FROM arrow should point to the head of the course arrow. When the system has captured the course, the right annunciator window should be blank.

m. Move the course arrow ten degrees both sides of the inbound course to the test signal. The V-bar should call for banks toward the new courses, and center (wings level) when the new courses are reached.

n. Tune the pilot's navigation receivers (one at a time) to the test set localizer signal frequency and set the MODE SELECTOR to GS MAN. GS should appear in the left annunciator window. Set course arrow to the inbound localizer course. The lateral deviation bar should show the localizer path in relation to the miniature airplane symbol. The ALTITUDE HOLD switch should return to OFF. The glide slope scale and pointer should become visible, and the localizer deviation display should become visible and operate.

o. Press the SC switch on the pilot's wheel. Determine that the MODE SELECTOR returns to SC mode and that SC appears in the right annunciator window. Determine that the V-bar calls for sufficient pitch-up indication to effect a safe go-around.

p. After approximately three seconds, set the MODE SELECTOR to GS MAN. The V-bar should be centered until the system again captures the localizer and glide slope course.

q. Turn the MODE SELECTOR to GS AUTO and determine that GS remains displayed in the left annunciator but that the right annunciator remains blank. Turn the marker test set on and set it to radiate a standard marker test signal with 1300 cps modulation. When the amber (middle) marker lamp (in the cockpit) is lighted, EXT should appear in the right annunciator window.

r. Press the SC switch on the pilot's control wheel. The MODE SELECTOR should revert to SC mode and SC should appear in the right annunciator window. The V-bar should call for fly-up.

During the above tests determine that the second in command's course indicator and flight director indicator display the same annunciator signals, alarm action, position and command signals as the pilot's display.

s. Upon completion of the tests, turn MODE SELECTOR to OFF, radio and power switches OFF, and disconnect external power supply to the airplane.

t. Make a thorough visual inspection of the flight director system for physical security of mounting in racks and instrument panel, electrical cable connection security, condition of dust covers and cases, inoperative instrument lights, etc.

u. Enter the date, name of the agency or person conducting the check, indicate satisfactory or unsatisfactory performance in the maintenance record of the flight director system.

The above check will also be made after the repair or replacement of any component of the flight director system.

Section VII

PILOT-CONDUCTED FUNCTIONAL FLIGHT CHECKS

Section VII
PILOT-CONDUCTED FLIGHT CHECK FOR LOCALIZER, GLIDE SLOPE, AND MARKER RECEIVERS: AND, BAROMETRIC AND RADIO ALTIMETER PERFORMANCE TESTS

This functional flight check will be made to check the operation of the localizer, glide slope, and marker receiving systems; and, the barometric and radio altimeter systems. It must be performed by a pilot holding Category II pilot authorization for the type airplane in which the instruments and equipment are installed. To minimize potential traffic conflict, pilots should contact the controlling air traffic control (ATC) facility, describe the planned maneuver, and obtain clearance to conduct the flight check. To eliminate radio frequency congestion,whenever possible such coordination should be effected in person or by telephone prior to the flight.

1. The flight check will be conducted in two stages designated as Stage 1 and Stage 2. Stage 1 will consist of a check of the proper sensing and indication of the radio and electronic instrumentation systems. Stage 2 will consist of a check during a simulated Category II ILS approach and landing (or go-around).

   Either Category I or Category II ground facilities may be used, providing that there are no outstanding NOTAMs restricting the use of the facility. The sequence of checks is optional. However, the sequence outlined below is intended to accomplish all required tests with minimum flight time. For convenience, see plan view, sketch attached.

2. Stage 1 - Flag alarm and deviation sensitivity check; first, of the localizer receiving systems on all headings; and, then of the glide slope receiving systems by intercepting the localizer inbound heading at an angle.

   a. With the airplane at least 15 miles from the ground facility, and at an altitude of 2000 feet above the terrain and positioned so that the localizer deviation indicator reads full scale deflection from the front course line of the localizer ground station, fly the airplane in the appropriate right-hand or left-hand 360 degree circle to cross the localizer center line, holding a ten degree bank in the turn. Under all of these conditions, the flag alarm indicator should be out of sight at all times. The localizer deviation indicator should move from full scale deflection to on-course to full scale opposite deflection. Be sure to observe that the indicator moves in the proper direction.

   b. Determine the altitude at which the glide slope intercepts the outer marker. While flying at that altitude, establish an inbound course to pass through the localizer course in the vicinity of the outer marker at approximately a 45 degree angle to the localizer centerline. The fly-through of the localizer course should begin at a point far enough beyond the outer marker to give full scale fly-up deflection of the glide slope indicator. Determine that:

(1) Normal glide slope indicator action is from full fly-up to full fly-down while passing through the glide slope path.

(2) The glide slope alarm indicator is out of sight at all times.

3. Stage 2 - Use a current ILS approach chart for the facility on which the check is to be conducted. Set the airplane altimeter barometric scale to the current altimeter setting for that facility.

Conduct a simulated Category II ILS approach and observe the following:

a. All warning systems indicate normal operating conditions.

b. Upon intercepting the glide slope at the outer marker, note that the barometric altimeters indicate proper altitude.

c. Test the radio altimeter for proper operation and required indications using the self-test feature of the equipment. The self-test feature of this equipment is shop adjusted to indicate a simulated 100 foot altitude when the self-test function is activated.

d. Observe proper altitude indication at the middle marker.

e. Observe proper altitude indication at the decision altitude.

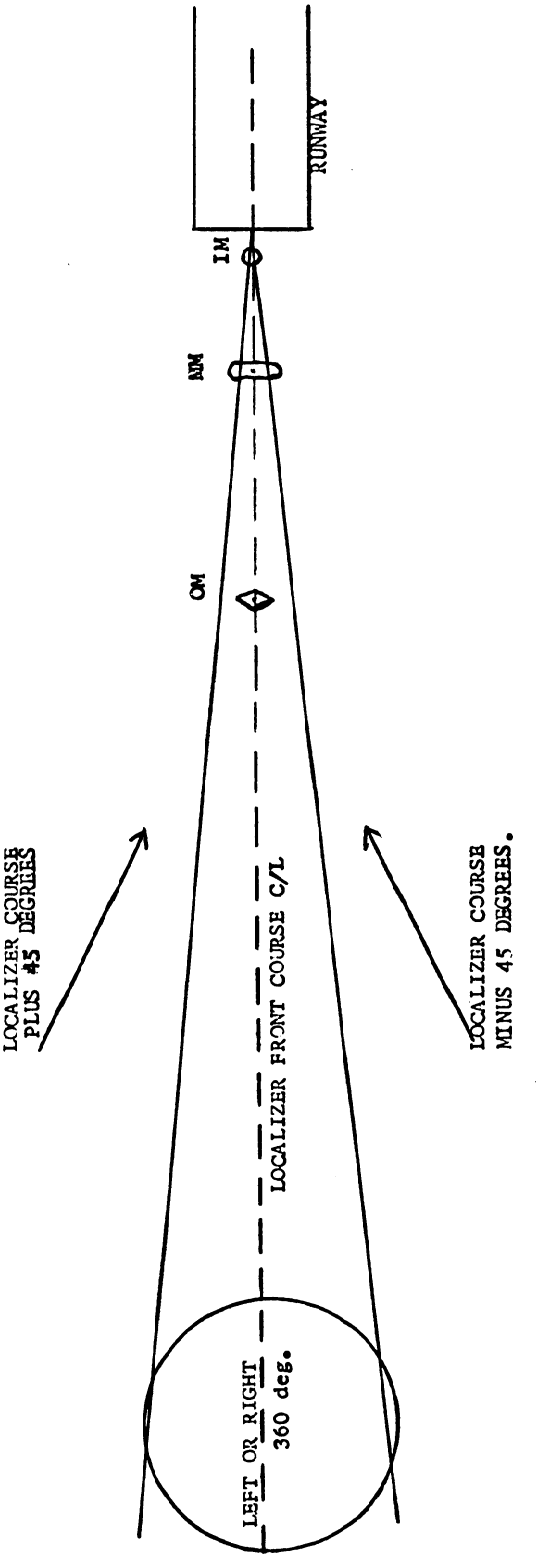
f. No unusual roughness or excessive attitude changes occur after leaving the outer marker.

g. Observe that the correct marker receiver indications are received while passing over the outer marker, middle marker, and inner marker (if installed at the facility). Observe that the marker indicator light colors are received in the following sequence:

Marker Beacon	Light Color
Outer	Blue
Middle	Amber
Inner	White

4. Upon completion of the flight check, make an entry in the inspection record for the localizer receivers, glide slope receivers, marker receiver, radio altimeter, and barometric altimeters showing the date, name of pilot, whether performance was satisfactory or unsatisfactory, and indicate that it was a pilot-conducted flight check.

PLAN VIEW OF LOCALIZER AND GLIDE SLOPE PERFORMANCE TESTS, STAGES 1a and 1b.



15 MILE AREA FOR LOCALIZER CIRCLING CHECK.